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# United States Department of Agriculture,

## DIVISION OF ENTOMOLOGY.

### THE LARGER CORN STALK-BORER.

(*Diatraea saccharalis* Fab.)

#### GENERAL APPEARANCE AND METHOD OF WORK.

A large white six-footed caterpillar, ordinarily with dark-brown spots, boring into the stalks of young corn, causing more or less distortion of the plants and seriously reducing the "make." Later, the same larva bores into old stalks, working down into the taproot and passing the winter in a channel at about the surface of the ground or a little below, transforming in the spring to a brown moth of the shape and size indicated in the figure.

#### DISTRIBUTION.

This insect is identical with the sugar-cane borer of Louisiana and the West Indies. It occurs all through the Southern States, west to Kansas, and as far north as Maryland along the north shore of the Potomac River. There is little doubt that it is the same insect which occurs at the present time in sugar cane in the West Indies and British Guiana, and there is some reason to suppose that the same species occurs in Java. Its distribution from one sugar-growing country to another in seed cane is an easy matter.

#### NATURAL HISTORY AND HABITS.

The adult insect issues from the old cornstalks in the spring. Soon after the young corn comes up it lays its eggs upon the leaves near the axils, and the young larva upon hatching penetrates the stalk at or near the joint and commences to tunnel, usually upward through the pith. The growth of the borer is rapid and it is very active, frequently leaving the stalk at one place and entering at another, making several holes in the course of its growth. When ready to transform it bores to the surface of the stalk, making a hole for the exit of the future moth, then changing to the pupa state.

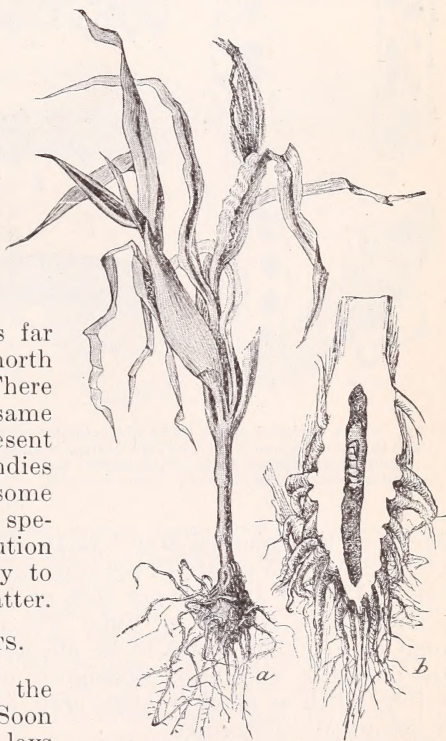


FIG. 1.—Work of the larger corn stalk-borer: *a*, general appearance of stalk infested by the early generation of borers; *b*, same, cut open to show pupa and larval burrow.

In Virginia, the pupa state is assumed from the middle of July on, and the moths issue from ten days to two weeks later. The eggs for the second generation of larvæ are laid soon afterwards on the well-grown stalks, and the larvæ are full grown by harvest time. They seldom enter the stalk at a point higher than the second joint, but from the second joint down to the ground the older stalks are frequently badly riddled. The damage done by the second generation consists largely in weakening the stalk so that it is readily blown to the ground, whereas damage by the first generation results in serious injury to the crop, preventing the growth of the ears. Upon reaching full growth, the larvæ of the second generation do not transform at once to pupæ, but the majority of them pass the winter as larvæ. In this condition they are most often pure white, the brown spots disappearing. In the

same way the spots are frequently lost on full-grown larvæ of the first generation just before they transform to pupæ.

The periods of egg-laying and larval growth are reasonably regular, from which it follows that early-planted corn is more apt to be infested than late-planted corn. In 1891 it was found that of corn planted during the first and second weeks in April, 25 per cent was damaged; of that planted in the third and fourth weeks, 20 per cent was damaged;

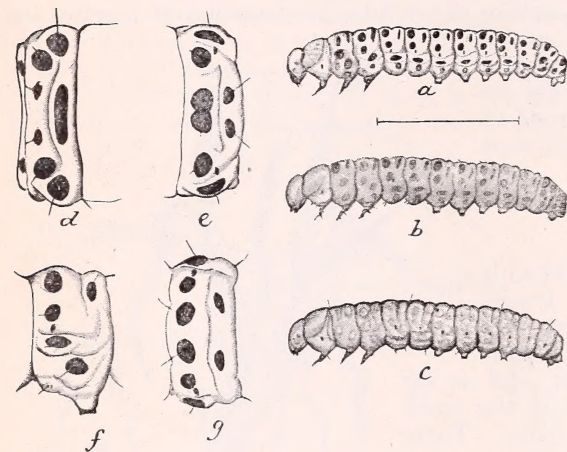


FIG. 2.—*a, b, c*, varieties of the larva of the larger corn stalk-borer; *d*, third thoracic segment; *e*, eighth abdominal segment; *f*, abdominal segment from side; *g*, same from above; *a, b, c*, enlarged; *d, e, f, g*, still more enlarged.

of that planted May 1 to 15, 15 per cent was damaged; of that planted May 15 to 31, 12 per cent was damaged; of that planted from 1st to 15th of June, 8 per cent or less was damaged. In fact, corn planted after the 1st of June was practically uninfested. Corn on high or low land seems to be affected about in the same proportion, the degree of infestation depending not upon elevation or character of soil so much as upon previous crop, as will be shown in the final paragraph upon "Remedies."

#### AMOUNT OF DAMAGE.

No instances of the complete destruction of a crop of corn by this insect have come to our notice. It is unquestionably true that most cornfields from Alabama to Virginia suffer to some extent almost every year from the work of this species. In seasons of abundance there is frequently a loss of 25 per cent to 50 per cent of the crop. The writer has seen the insect so abundant in South Carolina that one full-grown stalk contained over 30 holes. In Virginia during the summer of 1895 a single corn planter estimated his loss from this insect at over \$900.



## REMEDIES.

With the more careful and thorough methods of cultivation in the North, this insect will have no chance for its life. It will reach its maximum in localities like parts of South Carolina, where corn is simply stripped for fodder in early August and the bare stalk with the ear attached stands until after the cotton is picked, ginned, and shipped, and where even after the ears are harvested the stalks are seldom burned. In Virginia, however, the conditions are nearly as favorable for the continuous development of the insect. Where it is not intended to follow corn with winter grain, the corn is cut in October and the butts stand in the ground until the following spring, affording the larvæ safe places of hibernation. Even in plowing for another crop of corn in the spring many of the old stalks are not destroyed, but still remain standing through winter. Under these conditions there is no check whatsoever to the increase of the pest. Where winter grain follows corn, the stalks are not thoroughly dragged off (they seem never to be systematically pulled as in some parts of Maryland and other localities), and even when dragged off and collected they are not burned.

Where, however, the old stalks are systematically removed from the field and burned after the harvest or during winter, or where a constant rotation of crops is practiced, the corn stalk-borer will never become a serious pest, and the Virginia and South Carolina farmers have it in their hands to check it at any time by pursuing these methods.

Aside from corn, sugar cane, and sorghum, this borer has only one other food plant, so far as we know. This is the gama grass, or sesame grass (*Tripsacum dactyloides*), which grows very high in swampy ground. Farmers whose cornfields adjoin swampy ground will do well to burn over this grass during the winter. Aside from these simple remedies there is only one more point to be made, and that is, that rotation of crops is reasonably efficient against this insect. Where the custom of allowing stalks to remain in the field during the winter is practiced, it naturally follows that corn following corn will be badly damaged. Observations made by this office show that in 1891 the average damage to crops planted upon land which was in corn the previous year was 25 per cent, while the average injury to corn planted upon sod land was only 10 per cent, even where this land was reasonably close to former corn land.

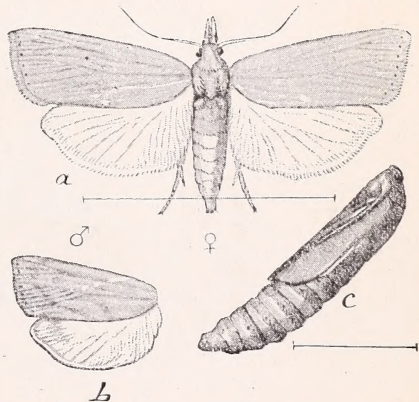


FIG. 3.—The larger corn stalk-borer: a, female; b, wings of male; c, pupa—all somewhat enlarged.

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Approved:  
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